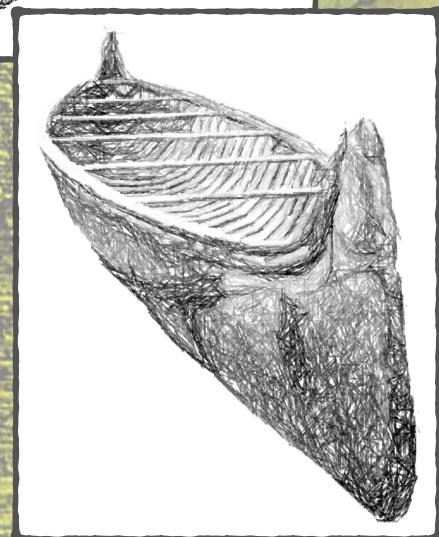
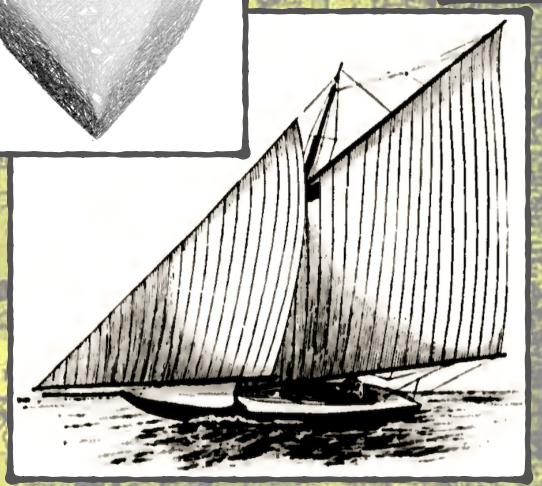
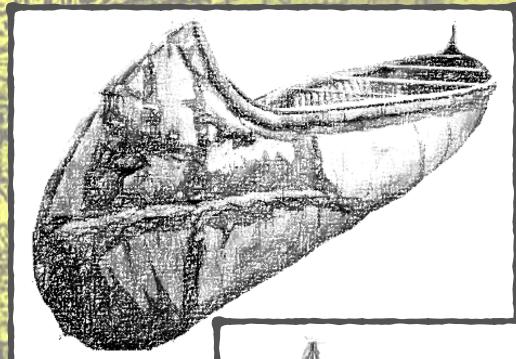
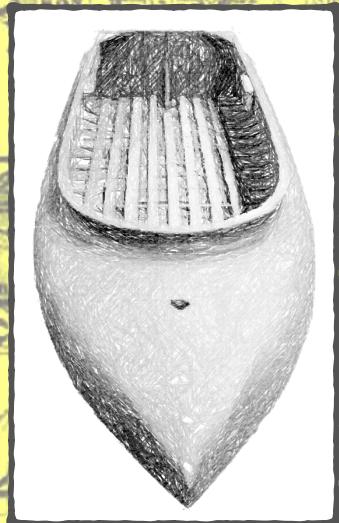


# MARITIME HERITAGE MINNESOTA



Ann Merriman  
Christopher Olson

## Minnesota Purpose-Built Watercraft and 3D Scanning Project Report



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## Acknowledgments

Maritime Heritage Minnesota (MHM) thanks the People of Minnesota for their support of the Minnesota Historical and Cultural Heritage Grant program, part of the Clean Water, Land and Legacy Amendment; without the MHCH Grant MHM received to conduct this work the project would not have gone forward. MHM thanks the Grants Office of the Minnesota Historical Society for their efforts. The Minnesota Purpose-Built Watercraft and 3D Scanning Project could not have been completed without the support of the following: Dan Cagley (Minnesota Historical Society), Lisa Stevens, Scott McGinnis, (Excelsior-Lake Minnetonka Historical Society), MHM Volunteer Kelly Nehowig, and the Gale Library staff at the Minnesota Historical Society. MHM thanks Steve Knutson, Jon Skow, and Nick Ronning for research information and images. Lastly, MHM acknowledges the efforts of our Board Members Steven R. Hack, Deb Handschin, and Chair Michael F. Kramer for their continued support.

Front Cover: Images by MHM and Mott 1894, 454.

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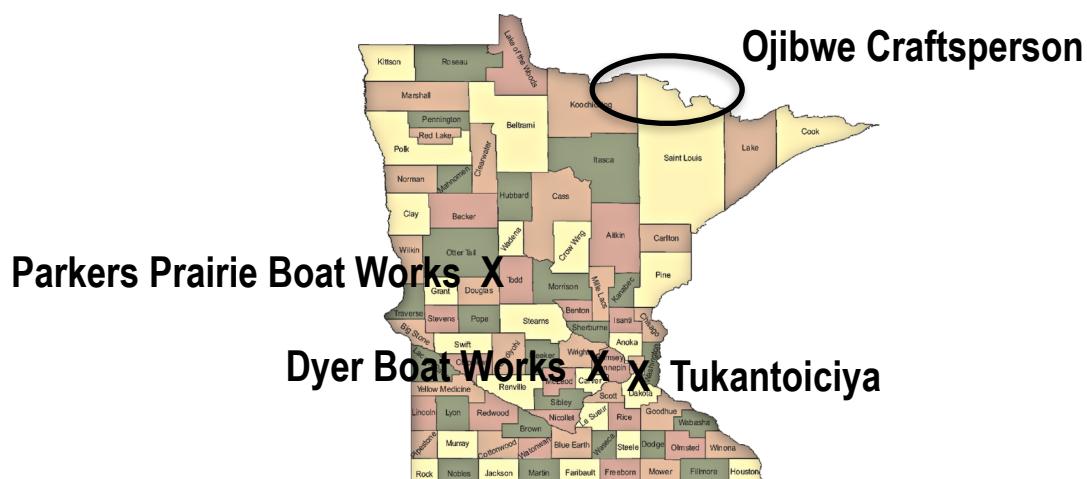
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## Introduction

Maritime Heritage Minnesota conducted the Minnesota Purpose-Built Watercraft and 3D Scanning Project (MPBW3DS) between mid-December 2017 and May 2018. The purpose of the MPBW3DS Project was to document, 3D scan, and conduct historical research of 4 Minnesota-produced watercraft located in 2 museum collections. MHM chose watercraft constructed by Tukantoiciya (John Blue Stone/John Bluestone) of the Mdewakanton Dakota from Mendota in Dakota County and Prior Lake in Scott County, an Ojibwe craftsperson in the Rainy Lake Region of northern Minnesota, Joseph Friet of Parkers Prairie Boat Works in Otter Tail County, and Arthur Dyer of Dyer Boat Works in Deephaven in Hennepin County.

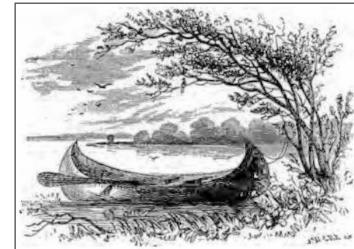
## Research Design and Methodology

Several Minnesota museums and historical societies have watercraft in their collections, boats that were constructed in the state. Often the general public, scholars, and students are unaware of the significance of small and seemingly mundane historic vessels preserved in our museums and historical societies. Drawing upon nautical archaeological and maritime historical knowledge based on fieldwork and research, MHM chose 2 birch bark canoes and 2 boats to investigate during the MPBW3DS Project because they were Minnesota-built, they had a particular design and were constructed for a specific purpose, they are rare, and they are relatively unknown in the maritime history of the state. MHM received permission of the holding institutions to 3D scan, measure, draw, and photograph 4 vessels: Tukantoiciya's Dakota Birch Bark Canoe, an Ojibwe Birch Bark Canoe, Joseph Friet's cedar strip Duck Boat and Arthur Dyer's fast racing sailboat *Onawa*. The 3D scanning process is a tool MHM has utilized since late 2016 to document smaller watercraft: the Big Swan Dugout Canoe at the McLeod County Historical Society, a Ramaley's Fisherman's Friend Row Boat housed at the West Hennepin History Center, wooden outboard motor boats from the Mille Lacs Indian Trading Post in Vineland, Joseph Dingle Boat Works in St. Paul, and Cokato Boat Works in Cokato, and a chrome fiberglass Herter's Model St. Lawrence outboard motor boat from Waseca. Beyond the actual scanning and documentation of the 4 watercraft during the MPBW3DS Project, another of MHM's goal was to determine the usefulness of the inexpensive scanning technology chosen for the work, along with the quality of its output.



## North American Birch Bark Canoes

Frenchman Jacques Cartier was the first European to describe North American birch bark canoe from first-hand experience on June 12, 1534. Obviously the natives of North America developed this sophisticated watercraft decades - more likely centuries - before Europeans encountered the vessels. Once exposed to birch bark canoes, many non-Native Americans exploited the strength, agility, carrying capacity, and speed of birch bark canoes when traveling on American and Canadian lakes and rivers. Cartier recounted the use of bark canoes by Native Americans to hunt seals and catch fish, sometimes in fleets of 40 or 50 vessels. The watercraft were also used as shelter during the night; they were turned over and acted as a protective cover for their owners. Throughout his movement westward from Florida to the Mississippi River, Hernando de Soto's<sup>1</sup> group mentioned Native bark canoes, including the vessel used to transport his corpse on the river in 1541 (Cook 1993, 10, 17, 24-25; Neuzil and Sims 2016, 44-48; Wilmer 1858, 443, 513).



An artist's rendition of a typical Native American birch bark canoe (Wilmer 1858, 443).

By 1641, French fur traders in the Great Lakes conducted business Native birch bark canoes as well as their own version of these watercraft - large vessels propelled by numerous people. The travels of Chevalier Robert de la Salle were characterized as passing "over thousands of miles of lakes and rivers in the birch canoe." In 1666 Jacques Marquette used birch bark canoes to travel along the St. Lawrence River; his activities and those of other French travelers (Louis Joliet in 1673) were described in detail, including the use of Native watercraft. Birch bark canoes "paddled by Indian guides, glided over solitary waters hundreds of leagues beyond the remotest frontier stations" and they were described as "light as bubbles...gliding over the still waters" up to 30 miles per day. In 1680, Louis Hennepin took to the Mississippi River in his birch bark canoe, along with two companions, in an attempt to travel northward and identify the source of the river. The lightness of birch bark canoes - compared with dugout canoes - was exemplified by these travelers when their Native guides used trails - Carrying Places - to portage their watercraft "for many miles, from water to water" (Abbott 1875, 5, 16, 19-23, 26-27, 29, 32, 128). Therefore, in Minnesota birch bark canoes were utilized by northern tribes and French traders by the mid-to-late 1600s. Reports of the utilization of the Kitchi Onigum - the Great Carrying Place - by Ojibwe peoples resulted in its use by French traders. The route became known as the 'Voyageur's Highway' and



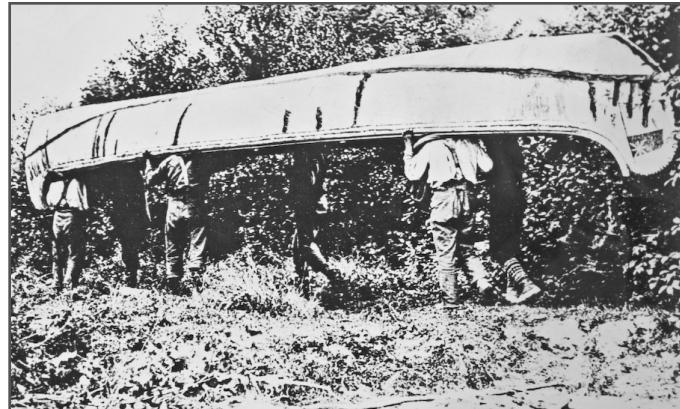
A 1781 edition of a map of northern Minnesota that includes Grand Portage (Captain Jonathan Carver).

<sup>1</sup>A few incorrect historical sources refer Hernando de Soto as Ferdinand de Soto, including Wilmer (1858).

it begins in the town now called Grant Portage on the Lake Superior shoreline (Wheeler et al 1975, 2-4)

In 1837, a first-hand account of birch bark canoe use in Minnesota and Wisconsin comes from Count Francesco Arese. Arese bought passage<sup>2</sup> with a Native American family in their 24-foot long birch bark canoe. He described the watercraft as “very nice” and that it was constructed of three pieces of birch bark sewn together lengthwise and tarred along the seams. Inside there are little hoops of very thin wood to hold the bark tight, and the whole contrivance is so thin and so light that, other things being equal, it weights no more than if it were made of pasteboard. I find that type of canoe far preferable to the wooden ones [dugout canoes], because they are more comfortable to sit in, it is easier to move about, they are less tippy, and being infinitely lighter than the others, they always float on top of the waves and consequently never ship water. And...they go faster than the others. There one bad point is that the least blow tears them...you have to disembark when the water is extremely shallow, to keep them from rubbing along the bottom; and at times you have to lift them out and put them in again, so as not to risk destroying them against some bank of particularly dangerous character (Arese 1934, 145-146).

At one point, Arese described the raising of a mast and sail - a blanket - on the canoe, the lightness of the watercraft and the addition of a sail allowed for great forward progress. Arese also detailed running a series of rapids - successfully - due to the talent and skill of the Native Americans working the watercraft. He declared “it is great fun to feel the little canoe leaping along the waves like a carp and flying as fast as thought!” Arese extolled the virtues birch bark canoes in the descriptions of landing the vessel and portaging the light canoe on their backs (Arese 1934, 149-151).



Men portaging a Voyageur-style birch bark canoe around 1880  
(MNHS HD2.42p13, digitized by MHM).



An Ojibwe man and two boys repairing a birch bark canoe in 1918  
(MNHS E97.35r11, digitized by MHM).



An Ojibwe birch bark canoe-under construction in 1895 (MNHS E97.35p20, digitized by MHM).

<sup>2</sup>Arese “urged them very hard to take me along” on their birch bark canoe travels. He paid them with four wool blankets, two pounds of gun powder, and four pounds of weapon shot. These materials had cost Arese \$35.00.

In the early 1850s, Native American canoe-making was discussed within the context of their creation as art. The process of birch bark canoe construction was detailed step by step, and the people who made them were described as skilled with good taste (Schoolcraft 1852, 511-513). A mid-19th Century account credited the Chippewa - Ojibwe - as "the most skilful [sic] canoe-builders in this country, and probably the most skilful [sic] in the world. The frame of the bark canoe is first made of pine, cedar, or some light wood, and then sheeted with birch bark. The edges of the sheathing are lapped, and sewed with thin filaments of elm bark; the seams are then covered with gum, and thus rendered impervious to water...the bark canoe [is] the most convenient when portages are made" (Schoolcraft 1854, 57).

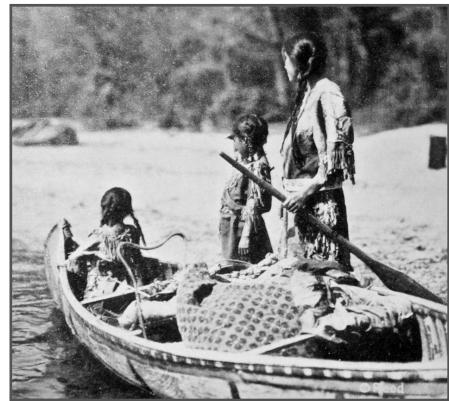


An Ojibwe man building birch bark canoes in 1910 (MNHS E97.35p3, digitized by MHM).



Ojibwe people transporting cargo in birch bark canoes in shallow marshes in 1912 (MNHS E97.35m4, digitized by MHM).

Dakota physician and author Ohiyesa (Charles Eastman) contended that bark canoes required more skill to construct, they took longer to produce, and could be ornamental when it was desired. Ohiyesa stressed the importance of choosing the correct type of tree bark for the canoe's hull; in Minnesota, birch bark is the most appropriate choice. In early Spring during the sap run, the bark was stripped from the living tree into pieces of uniform thickness. The hull pieces were laid on the ground, sometimes up to several weeks, to cure the bark and temper it for construction. In the meantime, Ohiyesa suggested the frames and gunwale of the canoe should be constructed of swamp or white cedar, split and formed into flat pieces. He stressed that the gunwale-level thwarts were used for structural support and were not used as seats; Native Americans sat in the bottom of canoes (Eastman 1914, 51-53). Numerous photographs of Native Americans and their birch bark canoes in Minnesota and Wisconsin have survived in the historical record. These images depict not only the use of birch bark canoes in the 19th and early 20th Centuries, but their construction and maintenance.

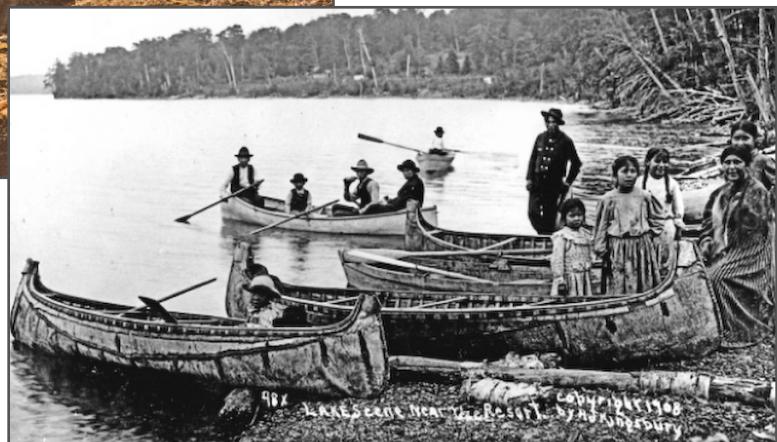


An Ojibwe woman and her children await boarding their birch bark canoe laden with their belongings in the early 20th Century (MNHS E97.35r5, digitized by MHM).



Above: An Ojibwe family traveling on the Lake of the Woods in 1911 (MNHS E97.35m1, digitized by MHM).

Left: An Ojibwe man re-seals the seams on the bottom of his birch bark canoe using pitch in 1912 (MNHS E97.35m5, digitized by MHM).



Right: Two watercraft designs are shown here in Wisconsin in 1908. The birch bark canoes resemble Dakota vessels - a rarity among historic photographs. The other three canoes/boats lack the upturned ends of Dakota and Ojibwe canoes.

### **Mdewakanton Dakota Birch Bark Canoe (MDBBC)**

**Accession Number 144**

**Minnesota Historical Society, St. Paul, MN**

#### ***History***

MHM learned of the existence of several birch bark canoes housed at the Minnesota Historical Society (MNHS) during research for the Minnesota Dugout Canoe Project. MHM chose artifact 144 for documentation based on her original condition, provenience, and cultural affiliation. The data recorded in census records, both Federal and Native American rosters, throughout the 19th and early 20th Centuries are inconsistent and often contradictory. Throughout the decades, Tukantoiciya's name was spelled Tunkanitoheyawin, Tunkantoiciye, To kan to eche, and To-kan-to-e-che in

various written records<sup>3</sup>. Further, variations in handwriting have shown Bluestone spelled as Blustone, Blueston, and commonly (and correctly), Blue Stone. Therefore, as close as can be determined, Tukantoiciya was born between 1825-1837 and died between 1905-1910. It could not be determined how many children he fathered or raised beyond his son Samuel and daughter Minnie. He spent his life in Eagle Creek Township, Prior Lake Settlement, and the Shakopee Settlement in Scott County, City of Mendota in Dakota County, Birch Coulee and Morton in Renville County, and Paxton Township in Redwood County.

At the time of the mid-June 1870 Federal census, Tukantoiciya was recorded to be 40 years old and his occupation was listed as a farmer in Eagle Creek Township near Prior Lake. His real estate holdings were valued at \$500, indicating he held a significant amount of land; MHM has determined it was probably around 95-100 acres. In addition to Tukantoiciya, there were six people in his household ranging in age from 5-35. A woman named Habistone was 'keeping house' within the Blue Stone residence; it is unknown if she was Tukantoiciya's wife, another relation, or hired-in. In subsequent Federal and Native American census reports, Tukantoiciya's age fluctuates up and down and the household members vary considerably. Throughout the records trail associated with Tukantoiciya, the identities of his wife and children remain in question, although his son Herakamani (Sam) carved the paddles associated with the birch bark canoe held at the MNHS. Within the records, Tukantoiciya is characterized as a farmer, hunter, and 'widower'. The 1905 Minnesota census is the last one linked to Tukantoiciya; his name does not appear in the 1910 Federal roster (United States Federal Census 1891, entry 8, 1895, entry 92, 1896, entry 98, 1897, entry 102, 1898, entry 98, 1910; Minnesota State Census 1875, entry 6, 1885, entry 42, 1895, entry 138, 1905).

In regards to the Mdewakanton Dakota Birch Bark Canoe (MDBBC), the Mdewakanton population was enumerated from the Birch Cooley Agency located in Morton in Renville County, regardless of where the band members lived in Minnesota. The Native American census records from 1889 and 1891 indicated Tukantoiciya lived at Prior Lake on his Eagle Creek Township land. In 1895, Tukantoiciya lived in both Mendota and Shakopee in Scott County; Herakamani also lived in Mendota and Shakopee, while his family resided only in Shakopee. Pictorial evidence indicates Tukantoiciya lived in or near Morton by 1902, along with generations of his children, grandchildren, and great-



Tukantoiciya around 1880  
(MNHS E91.1Br1, digitized by MHM).

<sup>3</sup>A gravestone for John To-Kan-To-E-Che-A Bluestone is found in Redwood County with the dates of 1846-1904. This grave is likely Tukantoiciya but the dates cannot be trusted.

grandchildren. Therefore, since Tukantoiciya lived in and around Mendota in 1895 and possibly a few years earlier, a construction date of 1892-1895 for the MDBBC is appropriate, with a specific date of 1895 suggested by MHM. MNHS accession information indicated that Mendota Ferry operator Clifford J. Clarkson received the MDBBC and her paddles in 1912; two years later, he presented her to the Henry H. Sibley House. Records also indicate the MDBBC was housed in the attic of the Sibley House; when she arrived at the MNHS storage facility is unknown (United States Federal Census 1889, entry 8, 1891, entry 32; Minnesota Historical Society 1932).



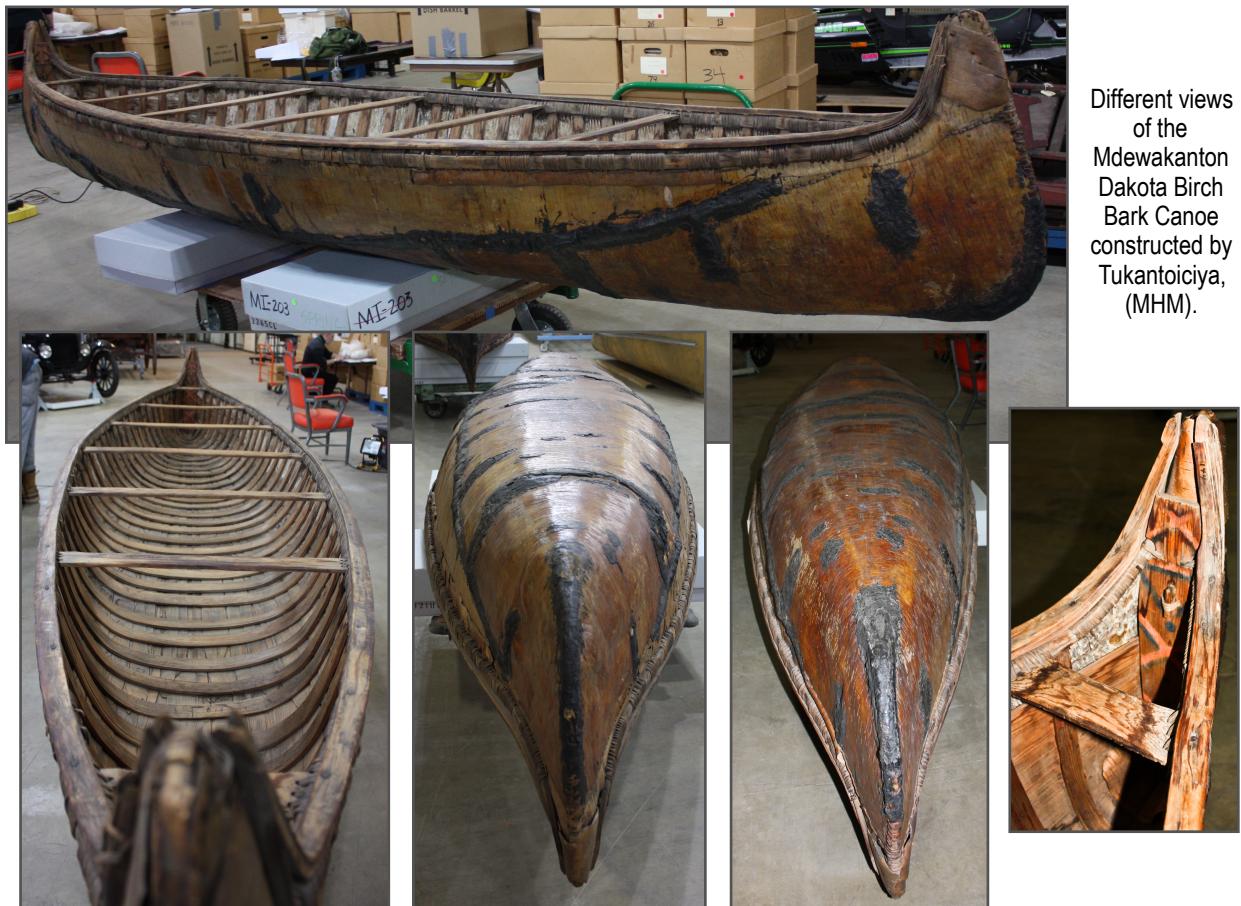
Tukantoiciya with his grandchildren and great-grandchildren in 1902. He is holding Alice Blue Stone (MNHS E91.1Bp3, digitized by MHM).

#### **Description: Mdewakanton Dakota Birch Bark Canoe**

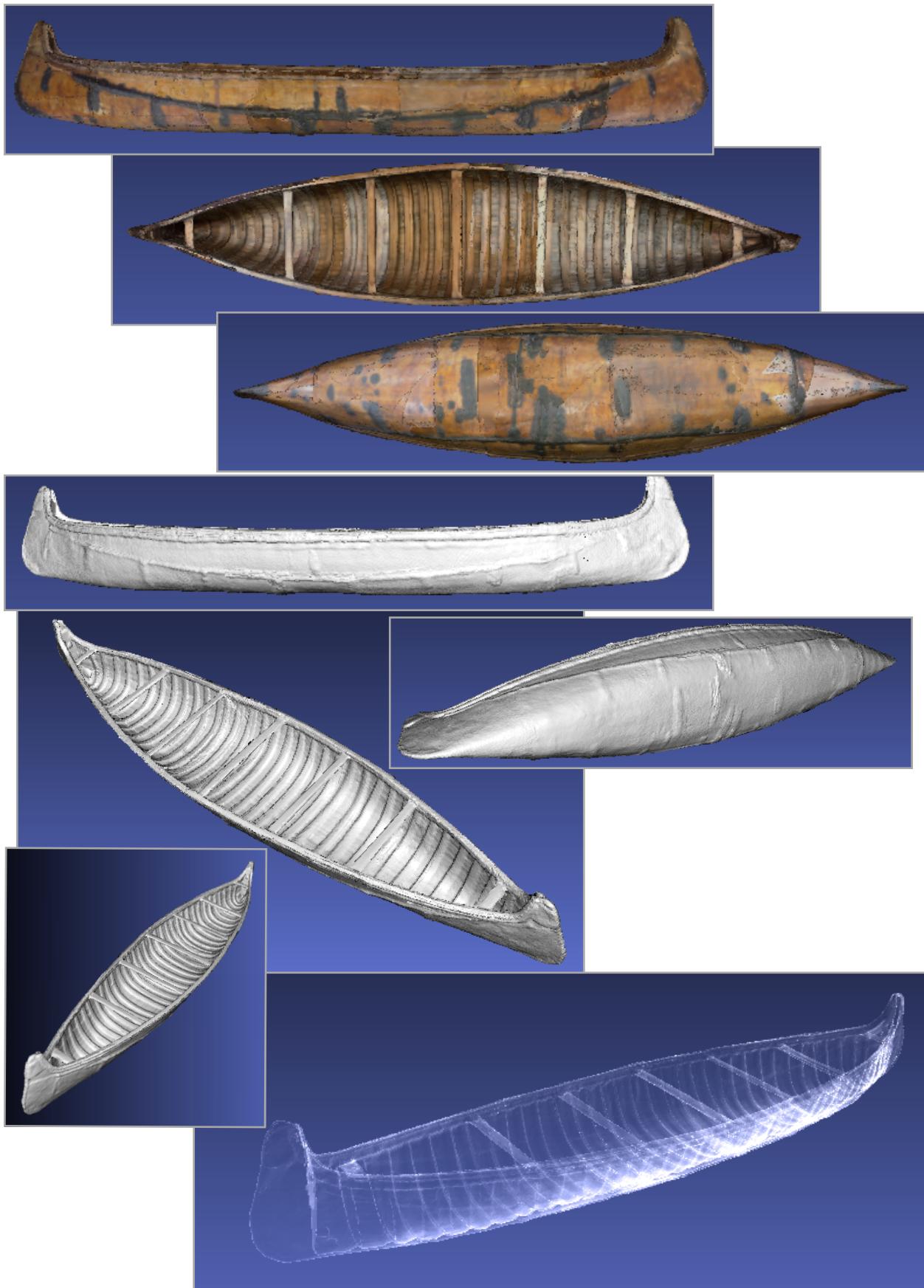
The MDBBC is 15.10 feet long, 3.20 feet at her widest beam, and has a 1.30-foot depth of hold. The construction technique<sup>4</sup> used to produce the MDBBC is termed 'hull-first' or 'shell-first' construction where her outer hull is formed into a 'canoe-shape' and the rigid structure is inserted inside later. A series of temporary vertical support posts - called canoe guide stakes - and thinner long horizontal pieces act as a 'ways' - an external framework - during vessel construction. Her hull is primarily comprised of four large pieces of birch bark, heated for pliability, sewn tog ether with split spruce root strips used as thread; the roots were heated for pliability and ease of stripping and splitting.

<sup>4</sup>Minnesota Experimental Archaeologist and woodworker Grant Grotz was featured in a video that followed the construction of a birch bark canoe from the preparation of materials to the completed watercraft.

Small pieces of bark at the gunwales and at both ends filled in areas to complete the outer hull. The sewn seams of the outer hull are caulked with pitch. The gunwales are constructed of horizontal cedar sewn together and topped with a flat caprail. The caprail was attached to the canoe's sides with short cut nails. Since birch bark canoes are keel-less, cedar frames that act as floors, frames, and futtocks were heat-bent in order to fit into the hull and form the vessel's over-all shape. Thinner, broader pieces of cedar wood are dispersed between the frames and the bark hull, further forming the canoe's shape. At both ends, internal heat-bent frameworks form the 'bow' and 'stern' whose ends were inserted into a vertical bulwark sometimes called a manboard. The manboards were decorated with red and black painted decorations shaped into 3 Xs and horizontal lines. Short broad thwarts on either end join 5 longer thwarts amidships at gunwale level. The lengths of the amidships thwarts compared to the 2 on either end demonstrates the general broad nature of the canoe's flat bottom.



The construction materials are indicators of the canoe's light construction and lightweight nature. This watercraft was easily portaged when necessary and could be maneuvered for outer and bottom hull repairs when needed. The ends of the MDBBC were turned upward at a 90 degree angle with flat tops. This 'bow' and 'stern' design is distinct among the many historic canoes housed at the MNHS with the exception of MNHS 1981.41.1 - characterized as an 'Algonquin-style' canoe - and MNHS 2011.99.1 - labeled as a 'hunter's canoe'. Studies of birch bark canoes over the decades indicate this 'old-form Algonquin with the squared end bow variation' type of watercraft is similar to the MDBBC (Minnesota Historical Society 1981, 2011).

**3D Scans: MDBBC**

**Decorated Ojibwe Birch Bark Canoe (DOBBC)**  
**Accession Number 6556**  
**Minnesota Historical Society, St. Paul, MN**

***History***

Like the MDBBC, MHM learned of the existence of the DOBBC housed at the MNHS during research for the Minnesota Dugout Canoe Project. MHM chose artifact 6556 for documentation based on her original condition, provenience, and cultural affiliation. The DOBBC was reportedly constructed in the Rainy Lake Region of northern Minnesota and is not affiliated with a particular band or individual. The canoe was dated to 1890-1899 and this date is reasonable based on her condition (Minnesota Historical Society ND).

***Description: Decorated Ojibwe Birch Bark Canoe***

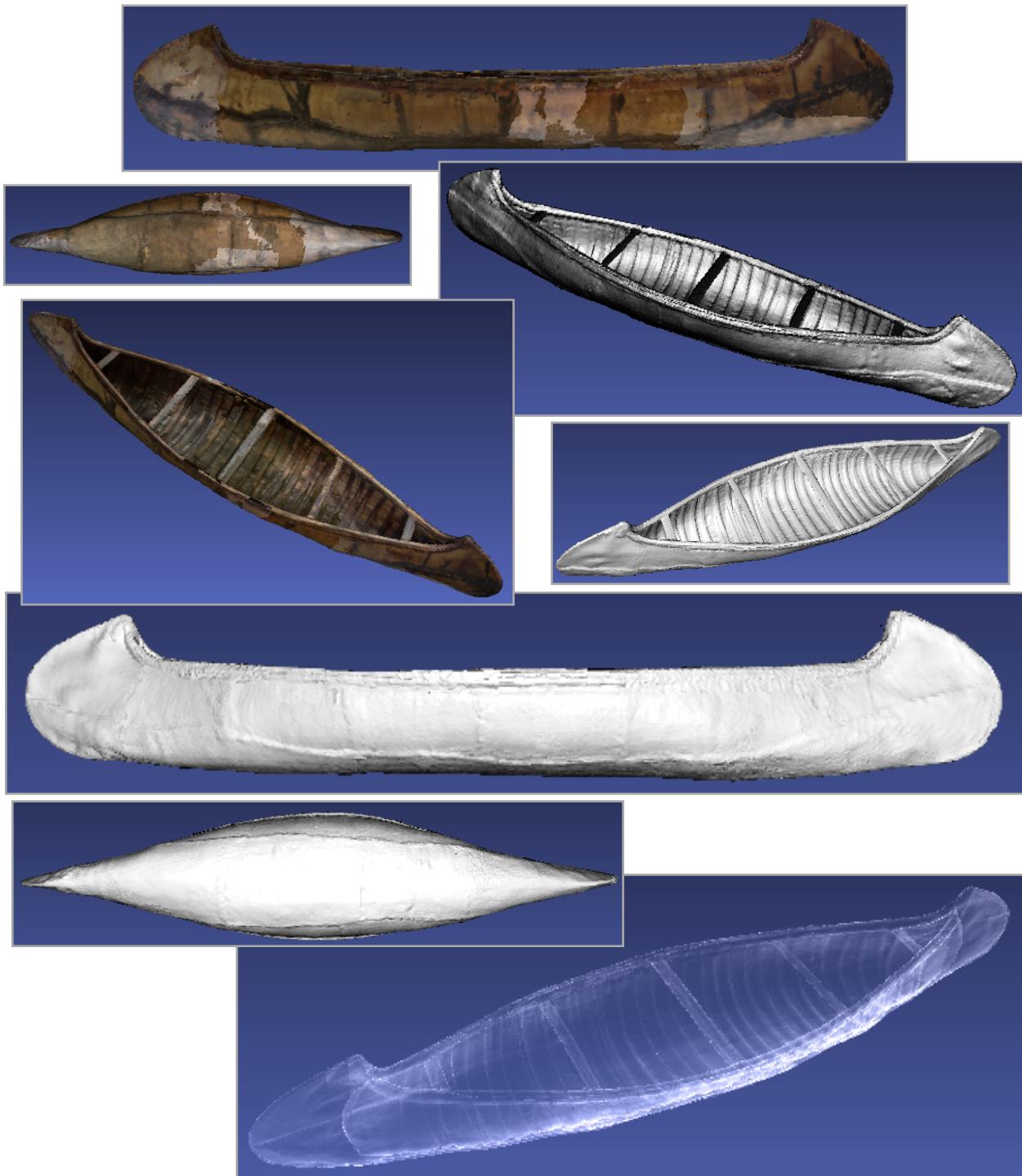
The DOBBC is 14.60 feet long, 3.20 feet at her widest beam, and has a 1.33-foot depth of hold. The construction technique used to produce the DOBBC is the same as used for the MDBBC: ‘hull-first’ or ‘shell-first’ construction using canoe guide stakes that acted as a ‘ways’. In contrast to the MDBBC, the DOBBC was primarily constructed of 7 main hull sections; 5 birch bark pieces comprise her bottom and 2 large pieces form her sides. Further, the DOBBC does not have small pieces of bark along the gunwale and the caprail is attached with wooden pegs instead of nails - except on both ends where the caprail is held on with nails due to damage. Beyond these differences, the DOBBC is sewn together with spruce roots, caulked with pitch, and framed with cedar. The vessel does not have manboards. However, thin vertical cedar pieces form the internal structure of the broad and rounded ‘bow’ and ‘stern’. Five gunwale-level thwarts, like the 7 thwarts seen on MDBBC, are part of the canoe’s rigid framework. The MDBBC and DOBBC have the same width amidships and are flat-bottomed. Unlike the Mdewakanton example, however, the Ojibwe canoe has much narrower ends, resulting in less hull touching the water when underway. The DOBBC’s light construction provided for easy portage. The ends of the DOBBC protrude forward and then turn back to a point, creating an elongated U-shaped hull. This ‘bow’ and ‘stern’ design is distinctly ‘Ojibwe’ as seen in numerous historic photographs and preserved birch bark canoes at the MNHS.



Different views of the Decorated Ojibwe Birch Bark Canoe from the Rainy Lake region (MHM).

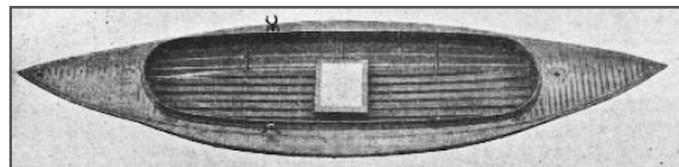
The DOBBC's gunwale and tips of the ends are painted red, and the canoe has images painted on both ends. On one side an arrow - suggesting a shooting star - is painted over 2 crescent moons of different sizes. Next to the moons, an image of a cooking pot hanging over a fire is painted in brownish-red. On the same side amidships, a large red arrow is found, then a red irregular shape, and a red teepee with an open doorway is painted on the end. At the other end of the canoe on the opposite side from the moons, a series of 7 red dots are painted in an arc.

### 3D Scans: DOBBC

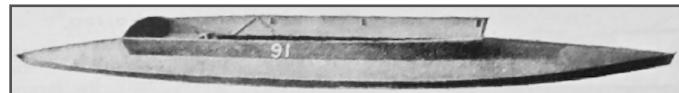


## North American Duck Boats

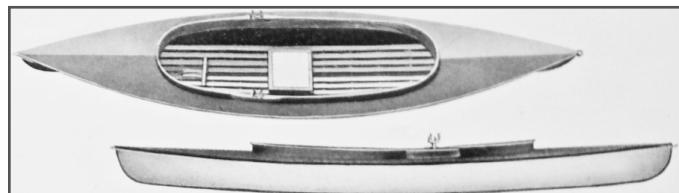
The development of North American duck boats - sometimes referred to as hunting boats - can be characterized as the next generation of hunting and fishing vessels after Native American birch bark canoes. The defining attributes of North American duck boats are their small size and depth of hold, and low freeboard. Other comparative characteristics of duck boats and birch bark canoes are their light - but elegant - framing and wide flat bottoms. The earliest non-Minnesota constructed example of a duck boat design that is suggestive of the Parkers Prairie Boat Works Duck Boat (PPBWDB) identified during this research is a late 19th Century steel watercraft. Even while being constructed of steel, the vessel is comparable to the PPBWDB. This dark green steel example was built by the W. H. Mullins Company of Ohio in 1899. In 1906, the Brooks Boat Manufacturing Company of Michigan produced a duck boat that, when compared to the Mullins watercraft, went in the opposite direction in terms of construction. The Brooks No. 91 Duck Boat was skinned in canvas and sold as a home-build kit for \$16.94 (Brooks Boat Manufacturing Company 1906, 41; W. H. Mullins Company 1899, 17).



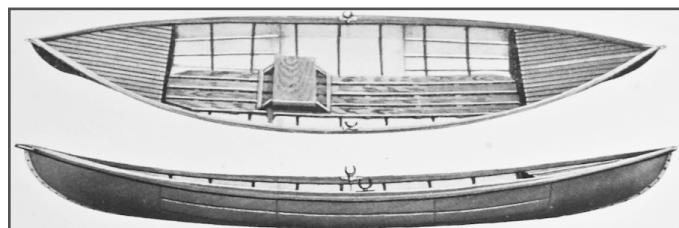
Mullins steel 'Standarts Side Air Chamber', also called a 'Bustle Duck Boat'. The boat had air chambers for additional buoyancy and her width provided greater stability (W. H. Mullins Company 1899, 17).



The Brooks No. 91 Duck Boat could be constructed at home using a pattern and 100 board feet of lumber (Brooks Boat Manufacturing Company 1906, 41, digitized by MHM).



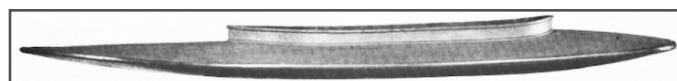
Ripley's Blue Wing Duck Boat could be constructed at home using a pattern and 100 board feet of lumber. The kit came with dead grass colored paint, a common choice for duck boats (Ripley Steel Boat Company 1909, 19, digitized by MHM).



Ripley's Little Giant Sportsman's Boat is constructed of galvanized steel that is painted in dead grass color (Ripley Steel Boat Company 1909, 18, digitized by MHM).

In 1909, Ripley Steel Boat Company of Illinois, like Mullins, offered galvanized steel hunting boats - the 'Little Giant Sportsman's Boat' and the 'Blue Wing Duck Boat'. These two metal vessels were touted as perfect for meeting the demands of hunters - one for shallow water and the other for deeper water - and both Ripley's craft were painted in 'dead grass'. In 1916, Thompson Brothers Boat Manufacturing Company of Wisconsin produced 3 duck boat models: the Improved Still Hunter, the Open Water Hunting Boat, and an early outboard model - the Detachable Motor Hunting Boat. These Thompson vessels combined 4 woods - cypress, cedar, elm, and pine - along with canvas-covered wooden decks to provide choices for the hunter that depended on where they launched their boat. In 1945, Thompson offered 2 duck boats - the Outboard Duck Boat and the Mallard Duck Boat -

Smooth Built. Shell Lake Boat Company of Wisconsin produced the duck boat 'Mallard Queen' in 1951. Constructed of cedar and oak, the Mallard Queen was double-ended, covered in canvas, and painted a dead grass color. In the next two years, in addition to the Mallard Queen, Shell Lake produced the Drake Mallard - a square-sterned version of the other duck boat (Ripley Steel Boat Company 1909, 19; Shell Lake Boat Company 1951, 23, 1952; Thompson Brothers Manufacturing Company 1916, 12-13, 1945, 13).



Thompson's Improved Still Hunter Boat was constructed of cypress, ash, and elm, and painted in dry grass color (Thompson Brothers Manufacturing Company 1916, 12).



Thompson's Open Water Hunting Boat was constructed of cedar, ash, and elm, and painted in dry grass color (Thompson Brothers Manufacturing Company 1916, 12).



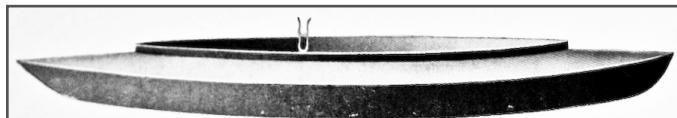
Thompson's Detachable Motor Hunting Boat was constructed of cypress, cedar, pine, ash, and elm, and painted in dry grass color (Thompson Brothers Manufacturing Company 1916, 13).

### **Minnesota Duck Boats**

The earliest Minnesota constructed example of a duck boat design that is suggestive of the PPBWDB located during this research was constructed by St. Paul firm Joseph Dingle Boat Works, reportedly around 1890. The dark green Dingle duck boat has a bow through-hull hole for the insertion of a punt pole that would act like a spud to anchor the craft in the shallow marshes while in use. Similarly, in 1908 Minnesota boat builder Moore Boat Works of Wayzata designed and constructed a 'No. 36 hunting boat' comprised of a light wooden framework covered in canvas. The No. 36 was promoted "as the most practical for marsh shooing. The heavy canvas covering insures a tight boat at all times, besides having a deadening effect upon noise". A poling paddle was standard equipment and 'dead grass' was the standard color for the No. 36. In 1912, after Ramaley Boat Company purchased Moore Boat Works in Wayzata, the Ramaley version of the Model 39 hunting boat was planked in cedar instead of skinned with canvas, but retained the same design. Like the Moore No. 36 boat, the Model 39 Ramaley hunting craft came standard with a poling paddle and was painted in the 'dead grass' color. Another



Joseph Dingle Boat Works of St. Paul constructed this duck boat in 1890 (courtesy of Steve Knutson).



Moore Boat Works of Wayzata offered this duck boat in 1908 (Moore Boat Works 1908, 23).



Ole Lind Boat Works duck boat, 1916-1930 (Mecum Auctions 2010, 8).

Minnesota duck boat constructed by Ole Lind Boat Works of Detroit Lakes was constructed of wood and is pointed on both ends but not 'double-ended'. The Lind duck boat was constructed in 1913 or later, most likely between 1916-1930. A duck boat, believed to have been constructed in or near Fergus Falls is nearly identical to the Lind Boat Works example and was likely constructed near the same time. Another duck boat reportedly built in or near Fergus Falls was designed with a square transom stern with an angled combing around the cockpit. This boat was painted dark green and was likely constructed in the 1930s and possibly the 1940s. By 1949, Minneapolis-based Aluma Craft Boat Company offered 'The Lifetime Ducker' and as the years went on, she became 'The Ducker'. She was billed as "America's number one duck boat...[that] will break ice without damage [and] is stable, steady, and safe for two hunters and a dog". The aluminum Ducker came in 'dead grass' color topped with green camouflaging (Aluma Craft Boat Company 1949, 1958, 20; Degerstrom, Opsahl, et al 2012, 74; Mecum Auctions 2010, 8-9, S3, S4, S5; Moore Boat Works 1908, 23; Ramaley Boat Company 1912; Steve Knutson, personal communication, February 2018).



Above and Below: Duck boats from the Fergus Falls area (Mecum Auctions 2010, 8-9).



'The Ducker' by Minneapolis-based Aluma Craft (Aluma Craft Boat Company 1958, 20).

### **Parkers Prairie Boat Works Duck Boat (PPBWDB)**

**Accession Number 1988.229.1**

**Minnesota Historical Society, St. Paul, MN**

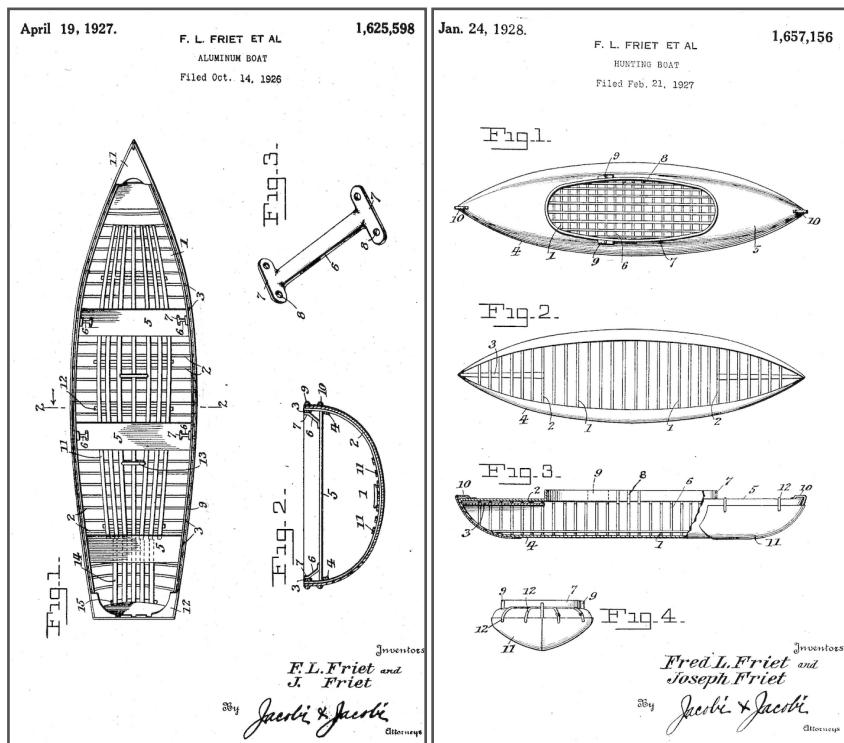
#### ***History***

Like the MDBBC and DOBBC, MHM learned of the existence of the PPBWDB housed at the MNHS during research for the Minnesota Dugout Canoe Project. MHM chose artifact 1988.229.1 for documentation based on her original condition, provenience, type, and rarity. The PPBWDB was designed and constructed by brothers Joseph and Fred Friet, reportedly in 1933, at their Parkers Prairie Boat Works shop in Otter Tail County. Throughout the history of the Boat Works, Friet constructed rowboats, small inboard and outboard motor boats in the 12 to 16-foot range, some longer inboards at times, and duck boats like the PPBWDB. Census records indicate Joseph was born in 1881 and by the 1910 census he worked as a boat builder in his own shop. Therefore, Parkers Prairie Boat Works was founded before the end of April 1910. By 1912, Joseph

owned 30.80 acres of land on the northeast side of Lake Adley and the company was located on this lakeshore property. It has been reported that his first boat building burned in 1917 and apparently the company burned again in 1928. In 1927 and 1928, Joseph and his brother Fred were awarded 2 patents for boat designs. The 1927 patent was a design for a round-bottomed aluminum boat with a low freeboard; Parkers Prairie Boat Works never constructed any version of this watercraft. The 1928 patent was awarded to the Friet brothers for a hunting boat, double-ended, and with very low freeboard. The PPBWDB is a modified version of the patented Friet hunting boat design since she has a square transom (Federal Census 1910; Friet and Friet 1927, 1928; The Independent 2003, 103-104; Ogle 1912, 25).



Joseph Friet's land on the shore of Lake Adley (Ogle 1912, 25).



The patents granted to Fred and Joseph Friet in 1927 and 1928. The double-ended duck boat was known as the 'Tipless Hunting Skiff' (Friet and Friet 1927, 1928).

In the 1920 census, however, Joseph Friet is reported to be a 'sawyer' at his own sawmill. MHM is convinced that when not constructing watercraft - probably due to a lack of orders - the Parkers Prairie Boat Works produced lumber. Similarly, in the 1930 census Joseph is labeled as a boat works mechanic. Further, with such a large piece of land, Friet crew crops for personal and possibly commercial use. He was assisted with the farming by his brother James in 1910 (who was labeled as working in general farming) and his brother Fred in 1920 (who was characterized as working on a 'home farm'). Also, Fred worked as a boat works mechanic in 1930 - as did Albert C. Karger - and a young lodger in the Friet household named Albert Marquardt worked at the Parkers Prairie Boat Works as a 'laborer'. By 1940, Joseph was labeled as the proprietor of his boat works and he was a lodger in the household of his employee, boat works carpenter Theodore M. Lee. Fred Friet also worked as a carpenter in the boat works that year, as did C. Merle Ralston, Julius J. Tennyson, and for a time, possibly Morgan Tennyson; Morgan's census entry initially labeled him as a boat works carpenter

but it was crossed out and replaced with ‘common labor WPA’. Map evidence indicates Joseph Friet continued to own the boat works until 1960; he sold the company to his employee Theodore M. Lee and he produced watercraft into the early 1980s (Federal Census 1910, 1920, 1930, 1940; The Independent 2003, 103-104; Nelson 1960, 49).



Examples of surviving Parkers Prairie Boat Works ‘Tipless Hunting Skiffs from 1928 and 1930 (Northern Ontario Sportfishing Centre, Nick Ronning, Jon Skow).



### Description

The PPBWDB is 9.50 feet long, 3.36 feet in the beam, and has a 1.15-foot depth of hold. The duck boat has a pointed bow and transom stern with a broad flat bottom. Her outer hull is constructed of thin cedar strips running longitudinally and attached to thin cedar frames. Along the vessel’s midline, the floors lie flat and extend outward toward port and starboard. The futtocks were steamed to bend them upward and back toward the midline into a U-shape. The cockpit combing is comprised 2 wooden pieces; the outer piece curves outward. Amidships, longitudinal blocks of wood on the inside of the combing have oarlocks attached. On the port and starboard quarters at gunwale level, 2 horizontal knees provide strength and stability. Inside the transom, 2 upright motor boards allowed for a small outboard motor to be attached if desired. A stern kneed provides support between the transom and the boat’s bottom. The vessel’s deck had a hole designed into the structure that goes through the hull and an anchor tube is attached on the starboard side of the transom. The deck hole and this tube were used to ‘anchor’ the deck boat in shallow water using a punt pole. The transom has 2 handles on port and starboard for easier carrying. A removable slatted walking board lies in the boat’s bottom, comprised of thin strips of cedar. The hull is dark green.

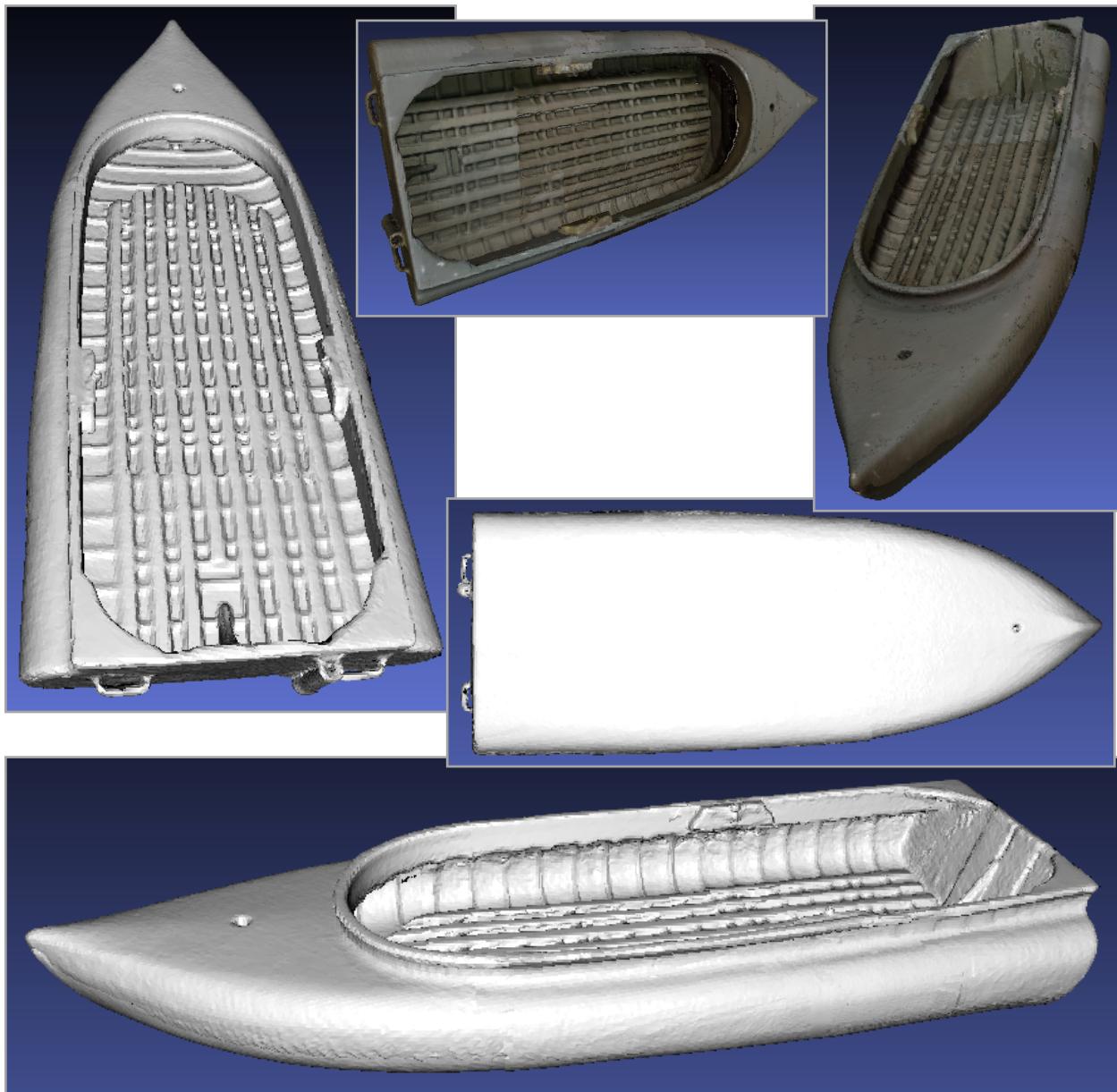


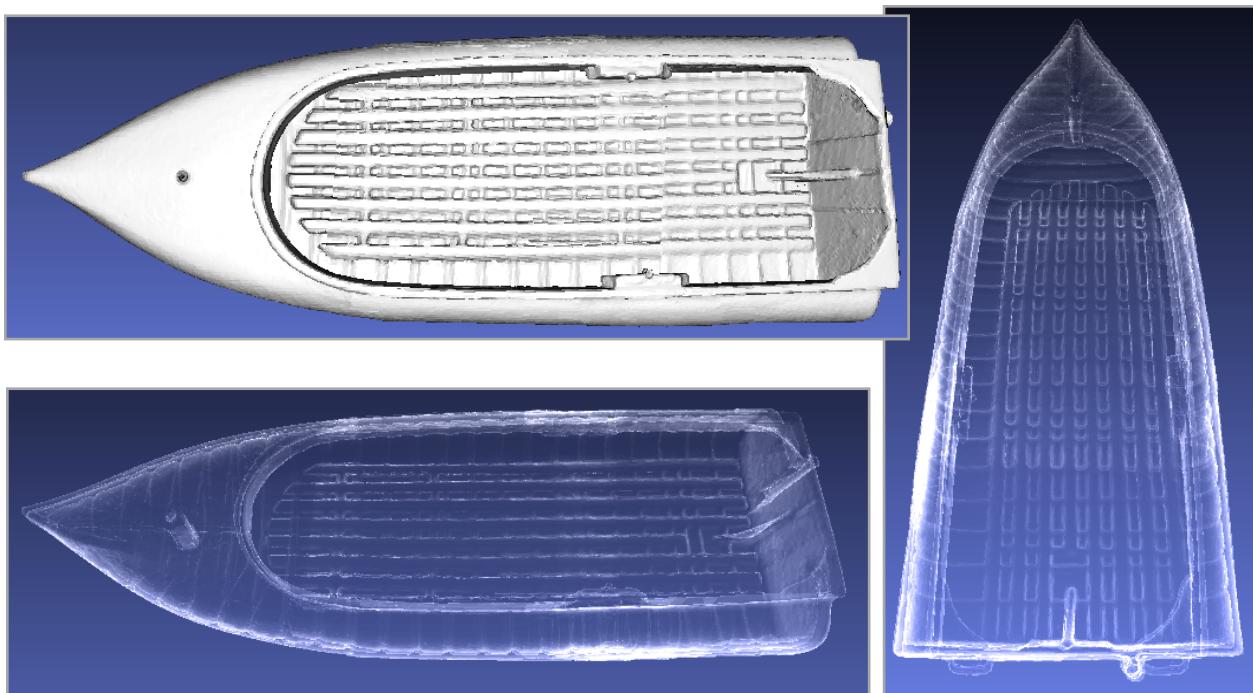
The Parkers Prairie Boat Works Duck Boat (MHM).



Different views of the Parkers Prairie Boat Works Duck Boat (MHM).

### 3D Scans: PPBWDB



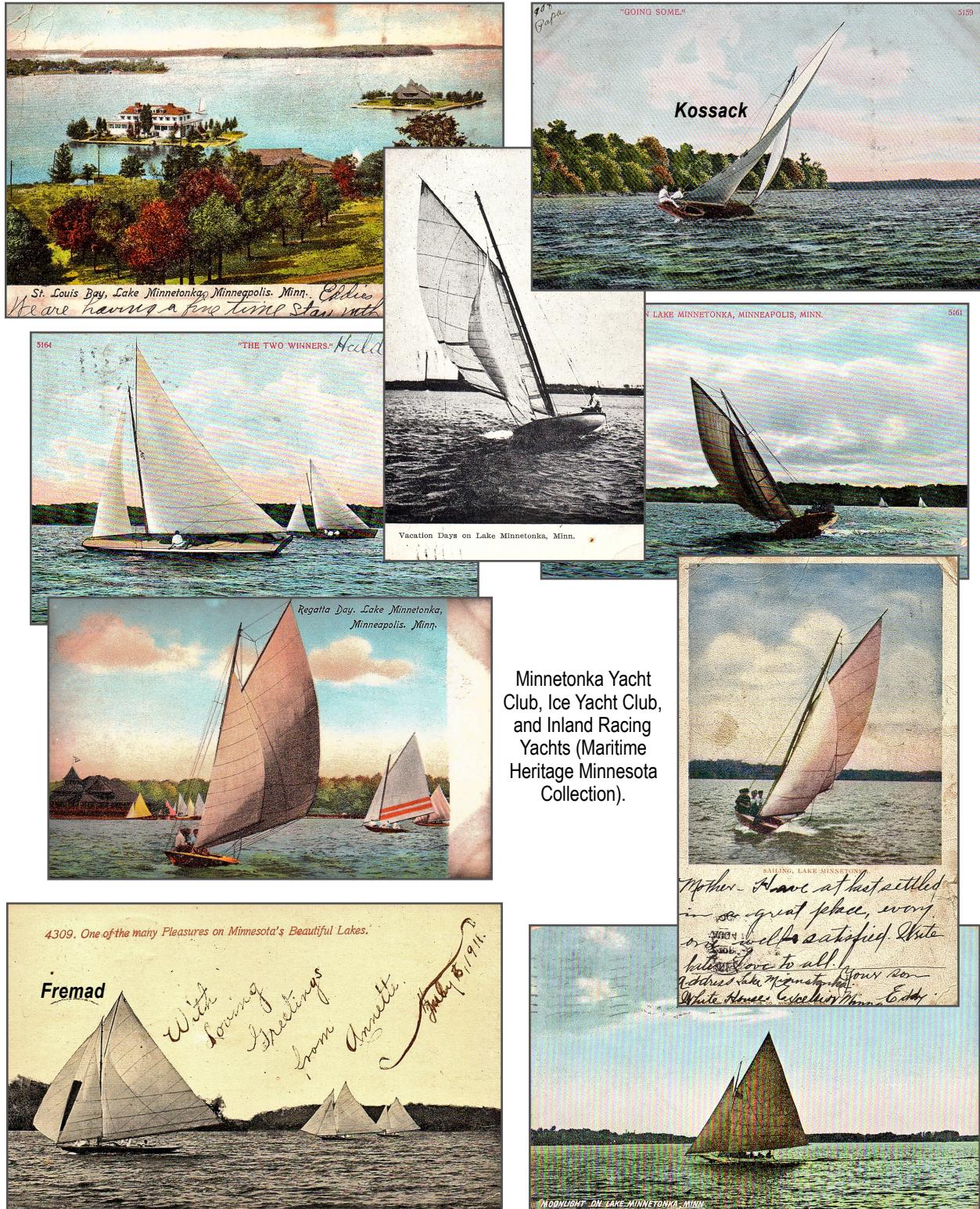


### Late 19th Century North American Inland Yachts

Pleasure boating and racing originated with Dutch and Venetian royalty, then spreading among the nobility and landed gentry in other European countries - particularly in Britain. Support for the sport of yacht racing came from most European governments for two reasons: the pastime trained excellent sailors and seamen, and nautical technological developments and innovation constantly occurred. Reportedly, the first yacht club was founded in Queenstown, Ireland in 1720 - the Cork Harbor Water Club. Rowing and sailing were known pastimes of the elite on the Thames River in London by 1739. By 1801, the gentleman's club Cumberland Society hosted an annual silver cup race from Blackfriars Bridge to Putney to Vauxhall; it was noted that the participating vessels were "no doubt, mere sailing boats and not decked vessels". In America, the *Jefferson* is recognized as the first yacht constructed in the United States, in Salem, MA. She was built by Christopher Turner, and was owned and operated by Captain George Crowninshield. She acted as a privateer during the War of 1812 and took three British prizes (Mott 1894, 47). For this study, the only vessels mentioned here that compare to *Onawa* would be the 'mere sailing boats' of the Thames and certainly not America's first yacht *Jefferson*.

In 1844, the New York Yacht Club (NYYC) was founded by 9 men with 9 yachts while on board the schooner *Gimcrack* anchored off the southern tip of Manhattan - the first such club in the nation. The Mobile Yacht Club followed the NYYC in 1847, only to be dissolved in 1859. The Magnolia Yacht Club resulted from a re-organization of the Mobile group in 1866, only to last for 5 years but was then re-established in 1882. Other clubs also sprang up including the Southern Yacht Club and the Neptune Yacht Club - with dozens to follow in the next few decades - including the Minnetonka Yacht Club (MYC) in August 1882. The MYC was characterized as:

A most flourishing yacht club...[even though] no one who sees beautiful Lake Minnetonka, situated in the far northwestern State of Minnesota would look upon it as a place where yachting could be either popular or practicable, but...scattered among Minnetonka's bays and inlets [is] a fleet of boats which in speed, beauty, and general attractiveness is second to none in this country...and they represent the most intelligent and advanced ideas among modern boat builders. There is scarcely a name among the successful designers of small boats for the last twenty-five years which cannot be found upon the books of this club as having designed one or more boats for its members (Mott 1894, 48-51, 451).





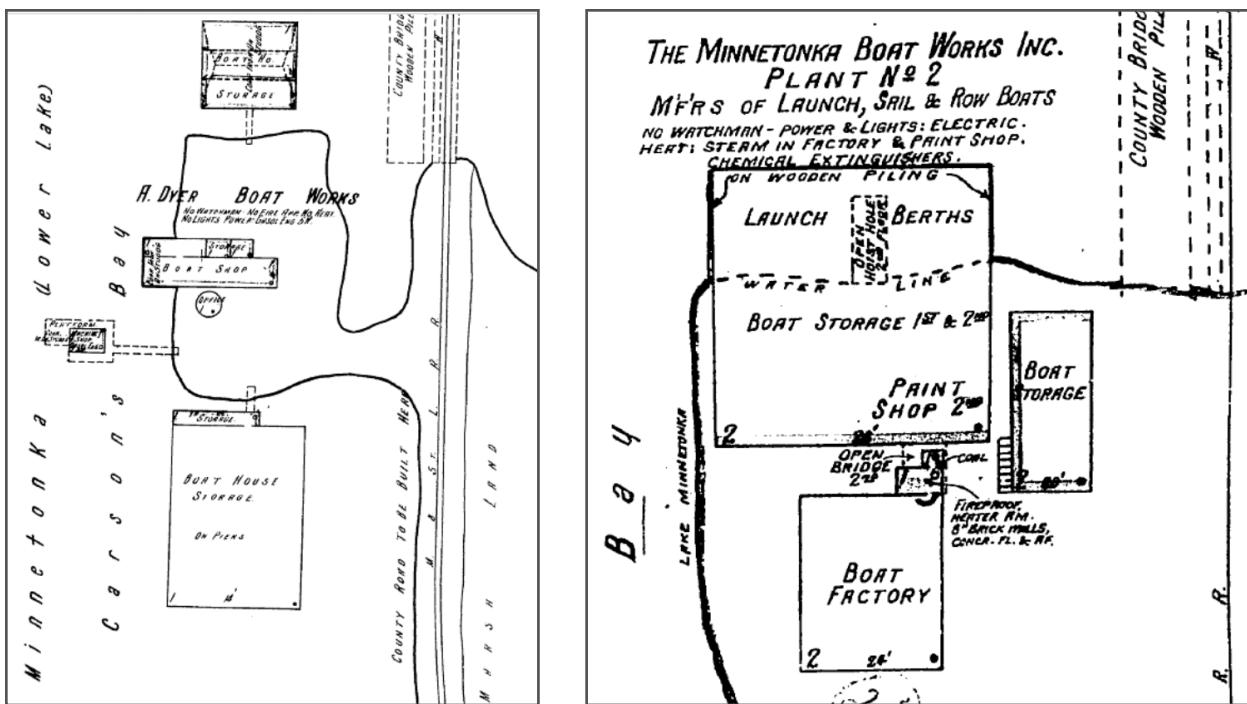
A map of the Lake Minnetonka area in Hennepin and Carver Counties, including the route of a race between Cornell University and the University of Pennsylvania in 1893, the same year Onawa was launched (Dimond 1893).

## Racing Sloop *Onawa* - Pronounced *Oh-Nah-Way* Excelsior-Lake Minnetonka Historical Society, Excelsior, MN

### History

Dyer Boat Works, under innovative boat designer and builder Arthur Dyer, produced dozens of boats<sup>5</sup> from 1890 into the late 1920s. Unfortunately for the maritime history of Lake Minnetonka, Dyer Boat Works completely burned in 1910, taking 43 vessels stored there with it – steamers, motor launches, and sailboats among them (McGinnis 2010, 300). Dyer re-built his business and kept working until 1928 when he sold his shop to Stephen and Walter Walker; they established the Walker Boat Works. In 1929, Walker Boat Works, along with Ramaley Boat Company (formerly the Moore Boat Works) and Wise Boat Works - both of Wayzata - were purchased and combined into the Minnetonka Boat Works. In the summer of 1892, 14-year old Ward Burton's first experience sailing on the Atlantic Ocean occurred on the *Nebula*, a 40-foot 'cruising' sloop. During this trip, the racing sloop *Harpoon* passed *Nebula*; the faster sailing

<sup>5</sup>Arthur primarily designed and built fast racing sailboats, but also constructed a few motor launches and even a work dredge as well. Some of his creations include a catboat built for Ward Burton - *Hermes* (1891) - and *Snark* (1890), *Kestrel* (1891), *King Bird* (1891), *Advertiser* (1892), *Apukwa* (1893), *Arrow* (1894), *Diamond* (1894), *Cupid* (1893), *Water Witch* (1893), *Marie* (1894), *Psyche* (1894), *Wasp* (1895), *Rambler* (prior to 1895), *Alcyone* (1896), *Cupid* (1896), *Magic Slipper* (1896), *Papoose* (1896), *Reveille* (1896), *Swift* (1896), *Marie II* (1897), *Gladys* (1899), *Sapphire* (1899), *Stella* (1903), and the *Boardman Dredge* (1907) (McGinnis 2010).



Dyer Boat Works in 1912 and the Dyer facility after it was acquired by Walker and then the Minnetonka Boat Works (Sanborn Map Company 1912, 710, 1930, 710).

vessel was piloted by the renowned sailor Charles Francis Adams III.<sup>6</sup> Then Burton was a crewman on the 20-foot racer *Alpha*<sup>7</sup> - designed by Nathanael Herreshoff - and he realized this East Coast sloop was faster than all of the Lake Minnetonka sloops due to her design. Over the winter of 1892-1893, Ward and his father Hazen J. Burton decided to "incorporate [their] radical ideas of design and construction" into a racing sloop to be built by Arthur Dyer of the newly-established Dyer Boat Works in Deephaven on Carsons Bay. Ward reminisced:

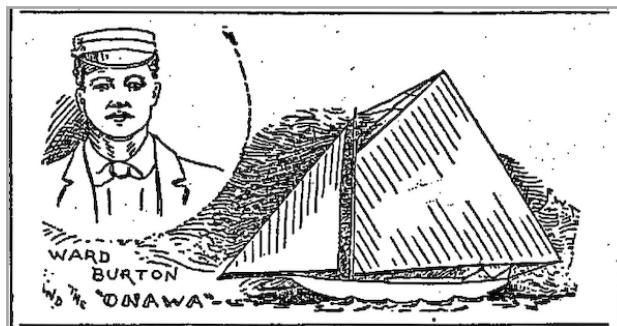
As we conceived the greatest speed to be attained by sailing over rather than through the water we selected a design with overhands both fore and aft. But, of greater importance, was lightness of hull. We adopted the construction of our Gerrish Canoe<sup>8</sup> from Bangor, Maine, flat ribs, think planking, canvas covered. The finished hull-26' long & 6'4" wide-could not have weighed over 200 lbs. as I remember crawling under the midship section and lifting the boat a few inches off the moulds...I spent my afternoons at the shop watching Arthur take the lines of the small model, enlarge them to scale on the floor of the ship, cut out the forms for the cross sections and finally set up the frame into which the steamed ribs were bent. When the thin planking was nailed to the flat cedar ribs I was privileged to hold the clinching iron. Our trial runs made in light and in moderate winds during the long twilight of early June evenings convinced us of her unusual speed. Her sails of 3 oz. Egyptian cotton (400 sq. ft. in area) from the Boston loft of Wilson and Silsby were satisfactory. Before the first race we replaced the heavy iron centerboard by one of very thin steel which made the "Onawa" even more sensitive but our crew of five of a total weight of 785 lbs., gave ample stability. In June, in the first championship race, the "Onawa" crossed at

<sup>6</sup>Charles Francis Adams III was the grandson and great-grandson of the President John Adams and John Quincy Adams. Adams III also served as the Mayor of Quincy, MA, and the Secretary of the Navy. He also skippered the America's Cup champion *Resolute* when she won the race in 1914 and 1920. *Resolute* was designed and constructed by Nathanael Herreshoff.

<sup>7</sup>Edmund Phelps of Upper Lake Minnetonka purchased *Alpha* - 'the Herreshoff Wonder' - and transferred her to Minnesota in April 1893 (McGinnis 2010, 6).

<sup>8</sup>The Burton's canoe was constructed by the E. H. Gerrish Canoe Company, reportedly the first firm to construct canoes with a wooden framework covered with canvas.

the leeward end of the starting line just escaping being blanketed by the 800 sq. ft. of sail of Sammamis [sic] boat "Siren" and that of the new Herreshoff boat "Kite" sailed by William Peet. It was my first race in the First Class Sloops and I was anxious to keep clear of the large fleet...a quartering run in a good full sail breeze enabled the "Onawa" to quickly take the lead and to round the Crystal Bay buoy about three minutes ahead of "Kite" then in second place. During the next run our lead was still further increased and we rounded the Point Lookout buoy about half a mile in the lead. In beating the windward toward the Club Buoy to complete the triangular course of five miles the larger boats did not seem to make any perceptible gain. Our experiment of sailing over the water was a startling success. Under favorable conditions "Onawa" averaged one minute per mile faster than the best of the boats designed to sail through the water. Thus, the Inland Lake Racing Boat came into existence...At Minnetonka, during the nineties, many boats were built of similar design to "Onawa", but her extreme lightness of weight was never duplicated (Burton 2013, 30-32).



**THE ONAWA WON.**  
Burton's "Mystery" Takes the Minnetonka Race.  
The first championship event of the season, under the Minnetonka Yacht club, occurred yesterday, and, as expected for the past week, the Onawa proved an easy winner in 1:46:11, with the Kite second in 1:51:51. The Alpha did not finish, owing to a broken jib halfward. The Atlanta won in first-class cats. No second-class sloops started. The race counts on the championship and also on the cup. The Onawa is owned by Ward Burton, and is a peculiarly built boat, with narrow, rounding sides, something after the style of the Alpha and Kite. She has a very long overhang forward, and extremely low freeboard, and is a trifle cranky. She carries 300 feet of sail.

## GREAT RACE.

An Exciting Sail on Lake Minnetonka.

### ONAWA TO THE FRONT IN STYLE.

Clerely Asserting Her Superiority Over the Eastern Clubs.

### MUCH TALKED OF KITE NOT IN IT.

The Alpha Disabled---A Delightful Afternoon's Sport  
--Sailing Record.

The "mystery" of Ward Burton's new yacht, the "Onawa," is out.

### THE RECORD.

#### Close of the Yachting Contests on Lake Minnetonka.

The ties in the yacht races at Minnetonka were sailed off yesterday, and the record closed for the year. It stands as follows:

First-class sloops, championship and cup—Onawa, Capt. H. J. Burton.

### WAS A ROYAL BATTLE.

TWENTY-EIGHT BOATS IN THE RACES  
AT MINNETONKA.

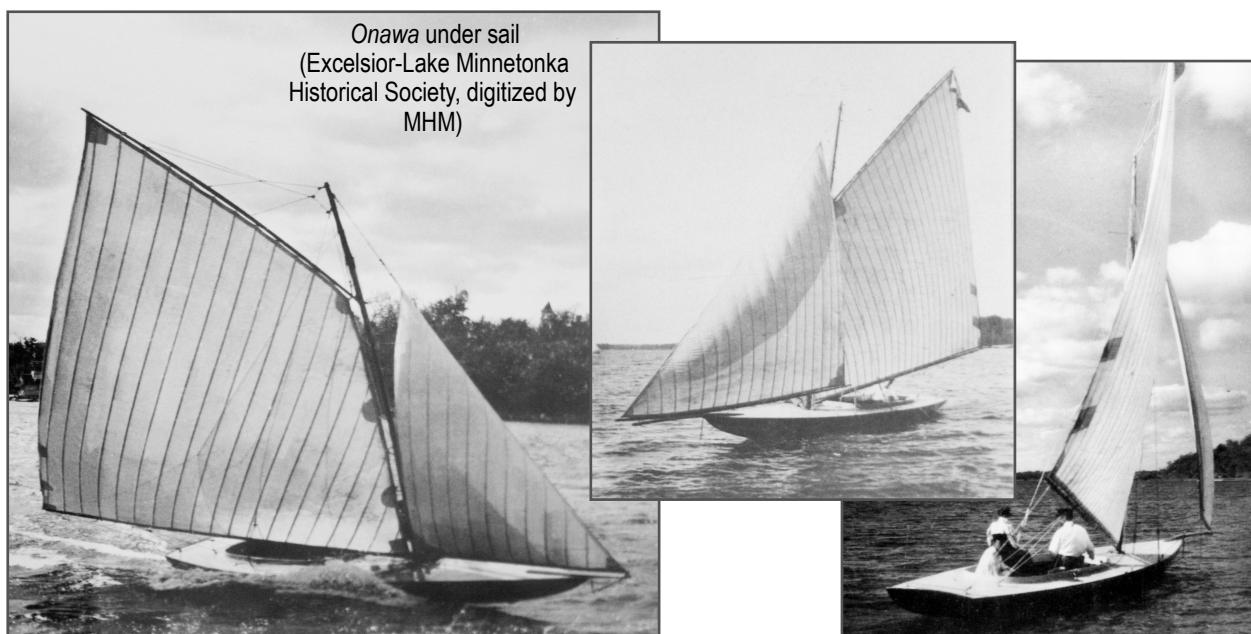
### THE ONAWA AGAIN WINNER.

Onawa's Victories  
(Minneapolis Sunday Tribune 1893; St. Paul Daily Globe 1893a-d)

### The Onawa Wins.

The yacht race yesterday on Minnetonka was taken by Burton's Onawa. This gives the boat a cinch on the championship. The time was as follows:

NAME—SAILED BY—	Actual Time.	Cor. Time.
Onawa—Ward Burton.....	1:41:23	1:29:21
Kite—Peet & Dunwoody.....	1:40:53	1:38:31
Alpha—E. J. Phelps.....	1:47:19	1:43:45
Siren—T. A. Sammis.....	1:54:56	1:44:58
Water Witch—Anson & Gillette.....	2:07:07	1:52:12
C. L. C.—Cook, Long & Champion.....	1:55:41	1:53:50
Aurora—T. E. Gatz.....	1:57:45	1:53:40



Onawa under sail  
(Excelsior-Lake Minnetonka Historical Society, digitized by MHM)

Later in 1893, 15-year-old Ward and his father were invited on board the NYYC's guest steamer to witness the first leg of the America's Cup. Burton vividly remembered watching the American defender of the Cup - *Vigilant*, a Herreshoff yacht - and her British challenger *Valkyrie*. Ward also enjoyed NYYC members questioning him about *Onawa*. Some NYYC members ordered racing boats from Arthur Dyer over the winter of 1893-1894, including the *Exit*, *Grilse*, *Apukwa*, and *Salmon*. In 1895, Ward attended America's Cup and also sailed in the Goelet Cup on board the 125-foot yacht *Jubilee* (Burton 2013, 32-33).

### ***The Onawa Principle***

With *Onawa*'s decisive victories in 1893, sailors at Lake Minnetonka turned to local boat-builders to build upon the "the *Onawa* principle...[where] the standing ballast was done away with, sails cut down and construction of boats lightened. All energy was concentrated to drive boats over rather than through the water". In 1896, the first-class sloop *Tartar* represented Lake Minnetonka in the Inland Lake championship, pitted against the Herschoff-built sloop *Alfreda* of the White Bear Yacht Club. *Tartar* defeated *Alfreda* in two 10-mile courses by six and eight minutes respectively. This competition convinced not only the White Bear Lake area sailors to adopt 'the *Onawa* Principle' in new boat design and construction, but to look to local boatwrights for its implementation. At White Bear Lake, the first successful inland sailing scow - *Aurelia* - was the next step in small racing sailboat development. From there, Ward Burton claimed "the White Bear Yacht Club gave to Western yachtsmen a perfect design" - the scow sloop *Yankee* during the summer of 1898 (Burton 1905, 26). Burton and Dyer revolutionized small racing yacht design and yet, *Onawa* only competed for one season - winning every race with times of 6 to 17 minutes faster than her nearest rivals - Herreshoff's *Alpha* and *Kite*. The MYC had adopted new sailing rules in autumn 1892 that allowed *Onawa* to surpass all challengers - and the MYC changed the rules once again after the 1893 season - effectively eliminating her from competition. Ward continued to sail *Onawa*, even setting a nautical mile speed record in 1902 at 4 minutes and 8 seconds (McGinnis 2010, 201-202). *Onawa* was donated to the Excelsior-Lake Minnetonka Historical Society by John Burton. She underwent 6 years of restoration before she went on permanent exhibit at the ELMHS in May 1986 (*Minneapolis Star and Tribune* 1986).

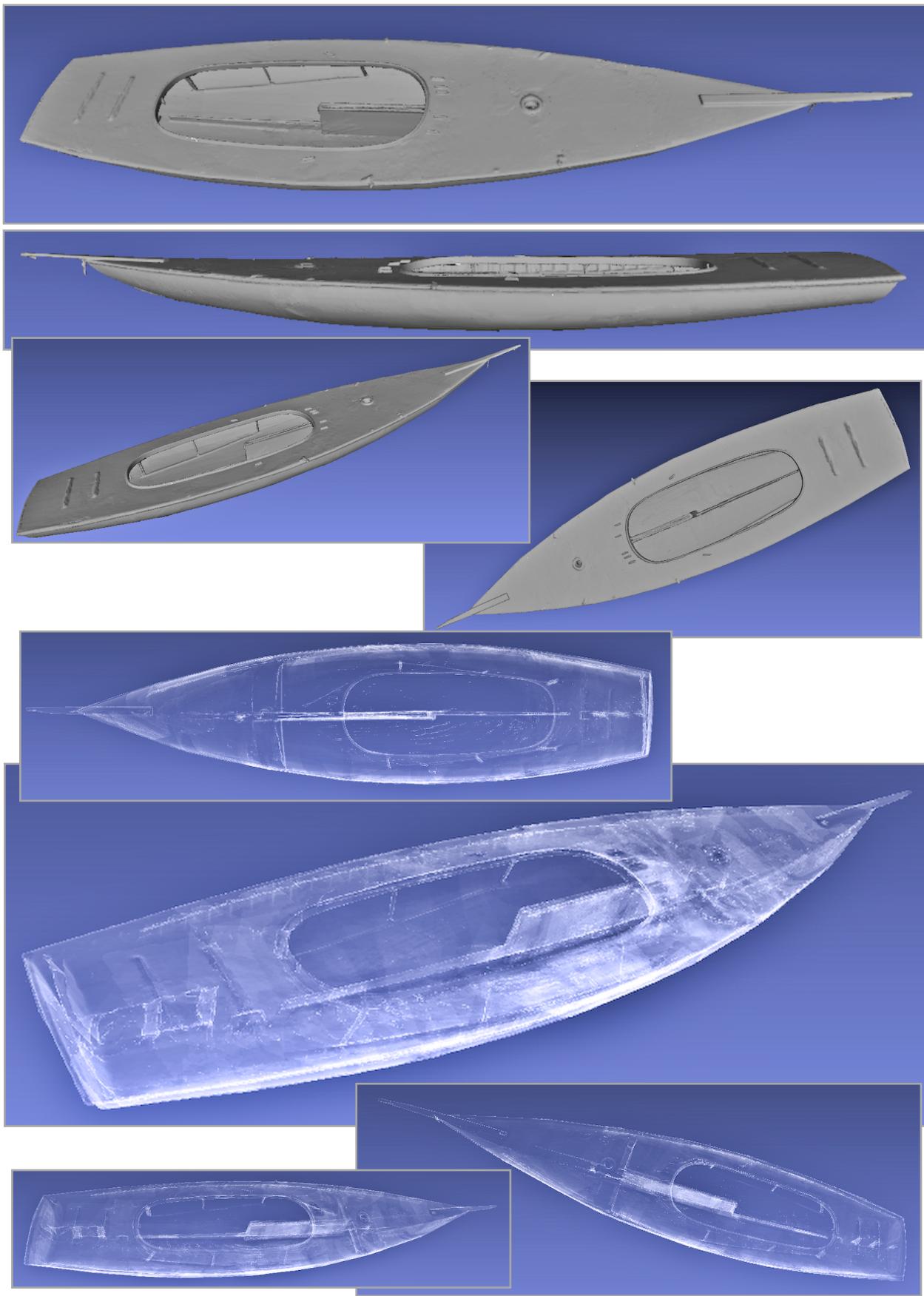
### ***Description***

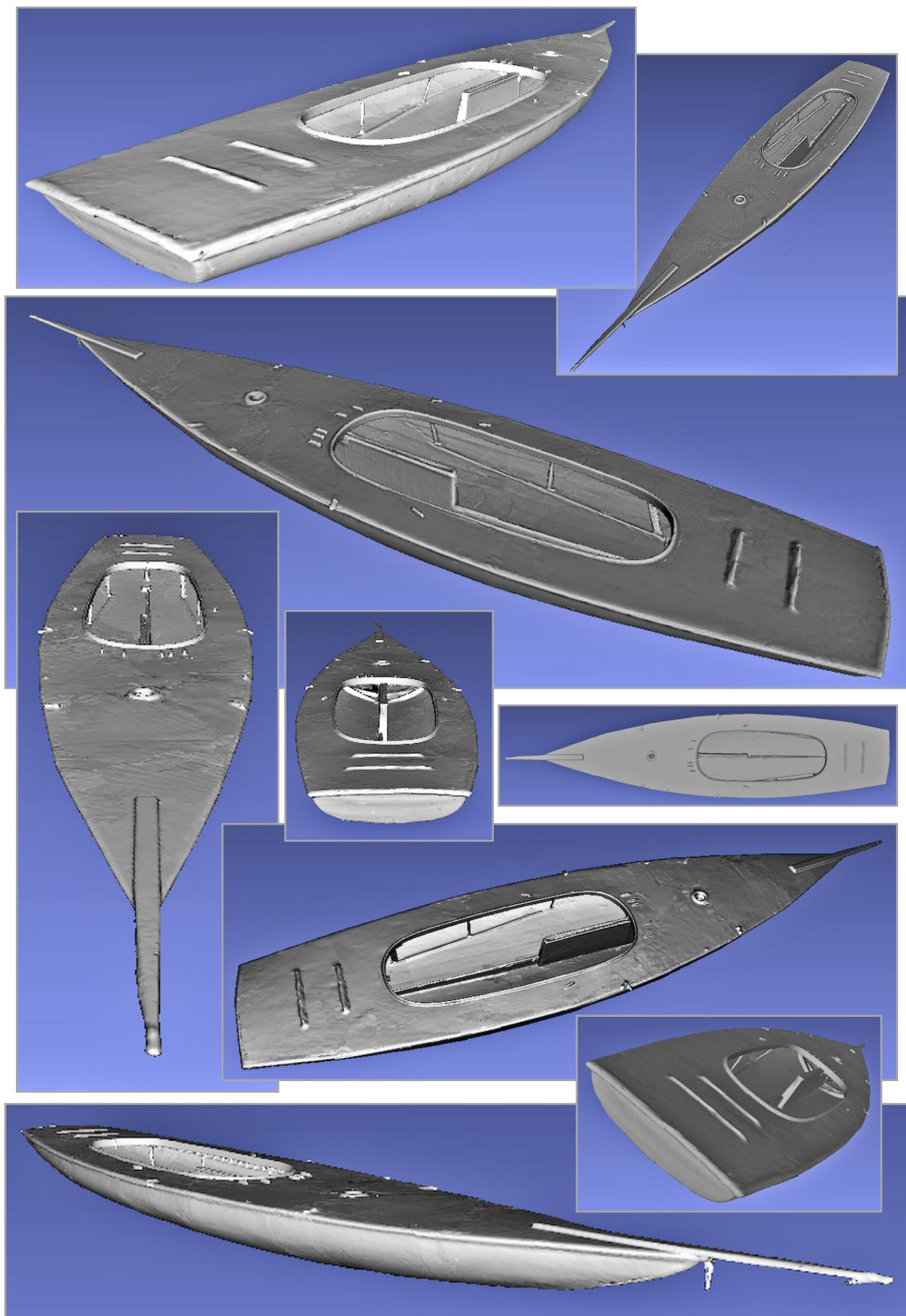
*Onawa* is 30.00 feet long to the tip of her bowsprit and her hull is 27.08 feet long. Her widest beam is 6.50 feet, she is 4.00 feet at the stern, and her depth of hold is 22.00 inches. *Onawa* is constructed of cedar - outer hull planks, frames, flush keel, deck, centerboard trunk, ceiling planking - and she is sheathed in canvas. She has a pointed bow and scow stern with a narrow rounded bottom. Her design - 'over-hanging' at both the bow and stern - is indicated by her long sleek bow that would ride above the surface of the water and her raked-aft stern. Her bowsprit is unpainted and varnished. Two cranse irons are attached to the upper and lower surface of the bowsprit near the tip. A martingale stay extends from the lower bowsprit pad eye to a dolphin striker/martingale boom and a bobstay extends aft from the martingale boom to the bobstay fitting attached to the bow. Her through-deck mast hole - that acts as a mast partner - is forward of the cockpit in line with the bowsprit. The rectangular cockpit has rounded corners and has a raised cowling that rises above deck level. The centerboard trunk is

offset slightly to starboard and has a metal cleat attached to its aft vertical end. Six square below-deck stanchions on port and starboard are inserted through holes in the ceiling planking; these vertical supports not only support the deck but provide strength and rigidity to the cockpit area and must be attached to floors below the ceiling planking. Two small bowed timbers are attached to the ceiling planking inward of the stanchions that provide additional stability to the thin supports as well as footholds for sailors. Brass deck fittings are found forward and aft on both port and starboard including 4 blocks and 2 padeyes; 2 mainsheet slide bars<sup>9</sup> are attached to the rear deck. Currently her hull is painted white and her deck is painted blue - historical evidence indicates her outer hull was painted yellow in 1893 (*Minneapolis Sunday Tribune* 1893). Her interior fittings, including the centerboard trunk and ceiling planking, are painted gray; her steel centerboard and rudder have been removed and are resting against the wall of the exhibit area. *Onawa* is exhibited unrigged, with her current mast, spars, rig, and sails bundled together, hanging on the wall; this equipment is not the original 1893 gear. Lastly, *Onawa*'s rudder and centerboard are no longer attached to the vessel and rest against the wall of the exhibit area.



<sup>9</sup>Historic images of *Onawa* show one slide bar slightly forward and one slide bar slightly aft of where they are currently located.

**3D Scans: PPBWDB**



## Conclusions

To more fully understand the cultural information the 4 small purpose-built watercraft documented during the MPBW3DS Project provides, it is helpful to consider these vessels within their historical contexts. It is unknown how many birch bark canoes Tukantoiciya constructed during his lifetime, but the existence of the MDBBC as a tangible example of his skill. Bark canoe construction is a complicated process that requires detailed knowledge of natural material manipulation - bark, roots, pitch, wood - and the principles of nautical science. Intensive labor was utilized to collect and process the appropriate natural materials that facilitated a particular way of life for the Mdewakanton Dakota - and in the case of the DOBBC, the Ojibwe people. The lightweight nature of these watercraft allowed for portaging over distances that could not be attained with dugout canoes. The skill and knowledge required to fabricate them was developed and passed down over the centuries, from one generation to the next. Their establishment as the primary mode of transportation and trade for Dakota and Ojibwe people facilitated their way of life for centuries. The preservation of the MDBBC and DOBBC for future generations benefits not only Dakota and Ojibwe people, but Native American historians, nautical and maritime scholars, and those interested in waterborne transportation. In consideration of the purpose-built nature of the MDBBC and DOBBC, their flat bottoms, upraised ends, light weight, sturdiness, rigidity, and pitched seams allowed these strong, versatile watercraft to function exceptionally in Minnesota's lakes and rivers. Stored in a climate-controlled environment, the MDBBC and DOBBC will survive and continue to represent Mdewakantaon Dakota and Ojibwe cultures and craftsmanship.

Joseph and Fred Friet designed and constructed the PPBWDB as a purpose-built small, low freeboard, flat-bottomed, camouflaged, and self-propelled (quiet) vessel in order to hunt waterfowl. The use of thin cedar slats to produce smoothly rounded sides indicates the PPBWDB was constructed by skilled boatwrights. The survival of the duck boat is another indicator of her quality construction. This small craft represents a sport that forms a large portion of seasonally sustainable commerce throughout Minnesota. When the PPBWDB - and other similarly designed watercraft - were constructed, the Friet brothers provided Depression- era employment of Parkers Prairie area men as carpenters and painters - a benefit to the local population. Further, the sale of boats beyond Parkers Prairie strengthened the Minnesota economy through increased production. It is hoped additional products of the Parkers Prairie Boat Works are identified, both in dry storage and on the bottom of Minnesota's lakes. Stored in a controlled environment, the PPBWDB is stable and will continue to survive in her current situation.

Arthur Dyer and his Dyer Boat Works, along with Ward and Hazen Burton, set the standard for American inland yacht racing in 1893. Their collaboration in producing *Onawa* continues to influence small racing boat construction and design. In consideration of Burton's and Dyer's goal - to construct a small, fast racing boat that skimmed over the water's surface - as a purpose-built vessel *Onawa*, successfully fulfilled her role after one race, let alone the one season she was in contention. She is the only known surviving example of Arthur Dyer's work and this fact alone categorizes

her as a significant maritime and nautical cultural resource. *Onawa* is safe in her current environment with humidity controls put in place.

The 4 vessels documented during this study, despite their design differences, are similar in terms of their low freeboard and they are lightly-built,. Further, the 2 boats that are not canoes - the PPBWDB and *Onawa* - were designed to move 'on top' of the water and not through it, just like the MDBBC and the DOBBC. The preservation of the wooden-hulled MDBBC, DOBBC, PPBWDB, and *Onawa* into the 21st Century, at ages of approximately 85-128 years old, is a tribute to Tukantoiciya, the Mdewakanton Dakota, the Ojibwe people, Parkers Prairie Boat Works, Ward Burton, Arthur Dyer; and the significance of Minnesota boat building and design. These 4 vessels are the historic precursors to the aluminum and fiberglass canoes, duck and hunting boats, and racing boats of several classes (Class A, C, E, and MC Scows, and Cat Class) currently in use. They also represent watercraft design and construction knowledge held by individuals - Minnesotans - whose training was acquired through hands-on learning imparted to them by cultural associations and familial ties. Maritime Historians and Nautical Archaeologists refer to this system of watercraft production as 'traditional' and most often the vessels are constructed without plans; the PPBWDB is an exception to this characterization. However, Joseph and Fred Friet's patented version of their duck boat is pointed on both ends while the PPBWDB has a transom stern; this modification was probably requested by a particular customer and a well-executed change to an established design is an indicator of their expertise.

The creators of the 4 watercraft documented during this project did not produce vessels in large quantities, making the survival of these craft paramount to the Maritime History of Minnesota. The acceptance of these vessels into museum collections guarantees their healthy survival in perpetuity - under the stipulation that they are stored correctly with appropriate environmental controls. The 3D scanning and documentation of surviving watercraft assists underwater archaeologists in identifying wrecks of the same or similar manufacture on the bottom of Minnesota's lakes and rivers. In addition, the 3D scanning of complete boats and specific components and attributes is useful for preservation, conservation, and restoration purposes. Also, printing examples of the scanned boats in 3D miniature can augment the archival record of each object, and even promote a museum's collection by offering the printed models as gift shop kits, complete with paint. The survival of the Mdewakanton Dakota Birch Bark Canoe, Decorated Ojibwe Birch Bark Canoe, Parkers Prairie Boat Works Duck Boat, and the *Onawa* greatly enhances our understanding of our shared maritime history. The continued curation of these rare examples of Minnesota craftsmanship creates a maritime legacy for the benefit of future generations.

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